



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,113	07/11/2001	Katsuhiko Mochizuki	1232-01	7939
35811 7590 03/20/2007 IP GROUP OF DLA PIPER US LLP ONE LIBERTY PLACE 1650 MARKET ST, SUITE 4900 PHILADELPHIA, PA 19103			EXAMINER BUTLER, PATRICK	
			ART UNIT 1732	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/20/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/889,113	MOCHIZUKI ET AL.	
	Examiner	Art Unit	
	Patrick Butler	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-19,21,22 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-19,21,22 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 15-19, 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto (EP 1033422A1) in view of Rowan et al. (US Patent No. 4,851,172) and Toshio et al. (Japanese Patent Publication No. JP 52066769 A).

With respect to Claim 15, Fujimoto teaches a method of producing a poly (trimethylene terephthalate) fiber where the yarn is drawn, heat treated and then subjected to a relaxation treatment (a polymer substantially comprising polytrimethylene terephthalate) [0035]. The intrinsic viscosity of the polymer is 0.4 – 1.5, preferably 0.7 – 1.2 (intrinsic viscosity at least 0.7) [0016]. In the process, the multifilaments are extruded from a spinning machine (method of producing multifilament yarn; melt spun) [0035] and wound round a first roll heated at 30 – 80 °C and then a second heated roll at 100 to 160 °C (hauled-off via a first heated roll; second heated roll; continuously subjected to a heat-treatment at the second roll and a relaxation heat treatment; the second heated roll at 105-180 °C) [0038]. The multifilaments are wound around a first roll at a speed of 300-3,500 m/min (at a spinning rate of at least 2,000 m/min.) ([0036] and [0037]), drawn by a second roll at a ratio of 1.3 to 4 (without winding, subjected to drawing performed between the first heated roll and a second roll at low draw rate)

Art Unit: 1732

[0038], wound round the second roll (by plural laps of the yarn) [0036], relaxed at a ratio of 0.8-0.999 (at a relaxation factor of 6-20%) [0040], mixed by methods such as interlacing before incorporating the yarn into fabric (after which it is continuously subjected to an interlacing treatment) [0045], and wound up on a winder (and wound up as a package) [0036].

Fujimoto fails to teach that the second heated roll used for the relaxation treatment has a surface roughness of 1.5 S – 8 S as required by claim 15.

Rowan is directed to a process for high speed, multi-end polyester yarn (Title). Rowan teaches manufacturing a multi-filament yarn by extruding, passing the filaments through drawing rolls, then through relaxing rolls, and then finally through a conventional air interlacing jet and then wound up (columns 2 and 3). The surface finish ( $R_a$ ) value for the rolls other than the first encountered roll can be between 35 and 120 microinches (0.89 – 3.0 micrometers) (column 4, lines 10 – 20). On page 14 of Applicant's Specification, Applicant indicates that 1.5S – 8S is equivalent to 0.8 – 6.3 micrometers as required by claims 15. Rowan suggests that the use of matte rollers produce a yarn with excellent mechanical qualities (column 4, lines 25 – 40).

Rowan does not appear to explicitly teach that  $R_{max}$  of the  $R_a$  is within the claimed range (e.g., 1.5S – 8S).

However, in this regard, Rowan teaches this value for  $R_a$  as previously described as well as making the surface smooth, which would minimize the variation in the surface (see col. 5, line 4). As such, Rowan recognizes that the respective  $R_{max}$  is a result-effective variable. Since  $R_{max}$  is a result-effective variable, one of ordinary skill in the art

Art Unit: 1732

would have obviously been motivated to determine the optimum  $R_{\max}$  applied in the process of Rowan through routine experimentation based upon minimizing the variation in  $R_a$  to achieve a smooth surface (see col. 5, line 4).

Since Fujimoto lacks disclosure to specific details about the surface roughness of the second heated roller, it would have been necessary and thus obvious for one of ordinary skill in the art practicing the invention of Fujimoto to look to the prior art as exemplified by Rowan to provide the details of the relaxation roller's surface texture. As heated matte rollers having a temperature of at least 140 °C and a surface finish value of 0.89 – 3.0 micrometers which has a relaxation between 1 – 10 percent produces a yarn with excellent mechanical qualities (see Rowan, col. 4, lines 33-35), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the heated matte finish relaxation rollers of Rowan in the invention of Fujimoto, motivated by the expectation of successfully practicing the invention of Fujimoto.

Fujimoto fails to expressly teach intermingling to a specific CF value.

Toshio teaches interlacing to a CF value of 10-100 with a synthetic multifilament fiber (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Toshio's CF value with Fujimoto's process of making filaments and intermingling in order to manufacture a sizeless, twistless fabric (see Toshio) and to give a fabric thus obtained excellent softness, stretchability properties, and color developing properties (see Fujimoto [0044]).

Fujimoto in view of Rowan and Toshio teach that the breaking extension of the yarn is 40% or more principally because they teach the same claimed process.

With respect to Claim 16, Fujimoto teaches that the intrinsic viscosity of the polymer is 0.4 – 1.5, preferably 0.7 – 1.2 (intrinsic viscosity at least 0.8) [0016].

As to claim 17, Fujimoto teaches that multifilaments are extruded from a spinning machine at a temperature from 250 – 290 °C [0033], which is 22 – 62°C higher than the melt temperature.

As to claims 18, Fujimoto teaches that the fibers are drawn on the first roll heated at 30 – 80 °C having a peripheral speed of 300 to 3,500 m/min without winding thereon (>3,000 m/min.) [0035].

As to claim 19, Fujimoto teaches in Example 13 that the relaxation ratio is 0.88 (see Table 1 continued, Example 13), which is equivalent to a relaxation factor of 12%.

With respect to Claim 21, Rowan teaches that the surface finish value for the rolls can be between 35 and 120 microinches (0.89 – 3.0 micrometers) (column 4, lines 10 – 20). On page 14 of Applicant's Specification, Applicant indicates that 1.5S – 8S is equivalent to 0.8 – 6.3 micrometers as required by claims 21 (3.2 S – 6.3 S).

With respect to Claim 22, the draw temperature is -15 – 35 °C higher (10-50 °C higher) than the glass transition temperature of poly (trimethylene terephthalate), which is 45 °C.

As to claim 23, Fujimoto teaches that the fibers have the relaxation heat treatment performed on the second and third rolls at temperatures 100 – 160 °C and 120 – 150 °C respectively (page 8, lines 25 – 55).

As to claim 24, Fujimoto teaches that the draw ratio can be 2.20 in Example 13. The Examiner considers a draw ratio of 2.20 to be a "low" draw rate as required by Applicant. Fujimoto in view of Rowan and Toshio teach having strength from a stress/strain curve of at least 3cN/dtex and a breaking extension of at least 42% principally because they teach the same claimed process.

### ***Response to Arguments***

Applicant's arguments filed 18 December 2006 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC 103(a) rejections. Applicant's arguments appear to be on the grounds that:

1) Applicant's definition on page 11, lines 29 and 30, of spinning rate is a winding speed in the step before the filament is drawn. Thus, it would be the peripheral velocity of the first roller.

2) The examples do not meet applicant's claimed limitations.

3) The differences between Rowan and Applicant's subject matter are tire yarn versus an improvement in soft stretching property by reduction of elongation stress in lower elongation range.

4) The drawing in Rowan is done in two steps to cause increased strength as opposed to the property of Applicant's fiber of soft stretching.

5) Rowan's teaching of polyester does not appear to teach polytrimethylene terephthalate and instead teaches only polyethylene terephthalate.

Art Unit: 1732

6) Applicant's interlacing is not simply interlacing. Instead, it is interlacing with applied tension modified.

7) One skilled in the art would not select Rowan's surface roughness numbers from the second heater roll yet not select the corresponding temperature.

8) The picking of selected features of the separate references without motivation or regard for the additional features of the references constitutes impermissible hindsight.

9) Surface roughness is  $R_a$  as discussed by Rowan, whereas Applicant's definition of surface roughness is  $R_{max}$ .

The Applicant's arguments are addressed as follows:

1) The cited portion of Applicant's specification is only an example of spinning rate. Thus, it does not exclude a spinning process via a definition, particularly since no definition more than an example is present in Applicant's specification as cited.

1) Moreover, Fujimoto teaches the first roller speed is up to 3,500 m/min [0037], which is greater than 2000 m/min.

1) Moreover, applicant's claim does not recite a required order of the rollers.

2) Fujimoto is relied upon for all that it teaches, including the parameters in paragraphs [0036-0040] which teach the claimed combination of velocities and relaxation ratios.

3 and 7) Rowan is relied upon for its teaching of roll surface texture as combined with Fujimoto for product a yarn with excellent mechanical qualities while providing appropriate roller texture conditions unspecified by Fujimoto.



3) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., making a product that is not low-shrinkage tire cord) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

4) The examiner recognizes that all of the claimed effects and physical properties are not positively stated by the reference(s). Note however that the references teach all of the claimed ingredients, process steps and process conditions and thus, the claimed effects and physical properties would necessarily be achieved by carrying out the disclosed process. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the examiner's position that the application contains inadequate disclosure in that there is no teaching as to how to obtain the claimed properties and effects by carrying out only these steps.

4) In response to applicant's argument that Applicant combines the features for soft stretch rather than strength, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

5) Rowan's teaches that the invention broadly relates to polyesters (see Abstract), which includes polytrimethylene terephthalate.

Art Unit: 1732

6) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., interlacing with applied tension modified) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

7) Absent motivation to use Rowan's temperature, Fujimoto's temperatures would be given the presumption of being sufficient.

7) Moreover, for the second roller, Fujimoto's teaching of 100 °C [0038] and Rowan's teaching of not above 100 °C (col. 4, line 21) overlap at least about 100 °C.

7) Moreover, Rowan is relied upon for its teaching of matte finish rolls throughout the process, on both the cooler and hotter rollers ( $100 < T < 237$ ) (see col. 4, lines 13-35). Thus, the temperature is not indicated as being necessary for a matter finish roll to be useful.

8) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Art Unit: 1732

9) Applicant's arguments with respect to different surface roughness definitions have been considered but are moot in view of the new ground(s) of rejection.


***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mo.-Th. 7:30 a.m. - 5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1732

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Patrick Butler  
Assistant Examiner  
Art Unit 1732

  
CHRISTINA JOHNSON  
SUPERVISORY PATENT EXAMINER  
3/14/07